TITLE OF THE INVENTION Modular Fluorescent Light Fixture

CROSS-REFERENCE TO RELATED APPLICATIONS

Wordin, J.J.: US patent No. 6,170,962; "Dual Compound Reflector for Fluorescent Light Fixtures" issued Jan 9, 2001

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT n/a

BACKGROUND OF THE INVENTION

Field Of the Invention

This invention relates to a fluorescent light fixture using a reflector and T5 fluorescent tubes to enhance illumination of a surface located below the fluorescent light fixture. The purpose of the light fixture is to save energy while supplying adequate levels of illumination.

Background Information

The F28T5 fluorescent tubes are 5/8-inch in diameter and 1143mm (45 inches) long, consume 28 watts of energy, and supply 2900 initial lumens. The efficacy, defined as the lumens per watt, is 103 for this T5 fluorescent tube. This is higher than for the T8 or the T12 fluorescent tubes. Because of the high efficacy of the T5 tubes, it is desirable to create a new light fixture using these tubes. The T8 and T12 tubes are 1194mm (47 inches) in length while the T5 is 1143mm (45 inches) in length. This makes the T5 tubes incompatible with existing light fixtures. In addition, the sockets required for the T5 tubes are smaller thus making the T8 and the T12 sockets too large to accommodate the T5 tubes. A problem is the fact that T5 tubes are long and thin and not structurally sound, and as a result, they experience higher than normal breakage during shipping. Insurance rates are high for such shipments.

The F14T5 fluorescent tube is 5/8-inch in diameter, 558mm (22 inches) long, with initial lumens of 1350 lumens. It has an efficacy of 96, which is not as good as the longer tube, but still superior to the T8 or T12 tubes. Because of their shorter length of 558mm (22 inches), these T5 tubes do not experience the breakage in shipping that the longer T5 tubes exhibit.

Retrofit of fluorescent light fixtures with reflectors and energy saving components is a one-of-a-kind endeavor. Older fixtures have to be dismantled. Measurements are taken so reflectors can be designed to fit that particular fixture type. This is a time-consuming and costly approach to retrofit. For all the above reasons, it is desirable to create a new fluorescent light fixture, which utilizes the T5 fluorescent tube 558mm (22 inches) in length.

BRIEF SUMMARY OF THE INVENTION

This invention involves an article of manufacture, namely a fluorescent light fixture. A patented reflector, hyperbolic in shape, is combined with the shorter T5 fluorescent tubes to create this new, useful, and unique innovation. The resulting modular fluorescent light fixture is square in plan form. Two modular fluorescent light fixtures can be installed side by side in the ceiling overhead to form a complete troffler. The two modular fluorescent light fixtures can be combined in two orientations, each combination giving unique lighting performance.

BRIEF DESCRIPTION OF THE DRAWINGS

In Figure 1 is shown the embodiment of the modular fluorescent light fixture, shown in cross-section. Figure 2 shows the bottom view of the light fixture with T5 tubes and hyperbolically shaped reflector. Figure 3 shows how two modular fluorescent light fixtures can be installed so the tubes are parallel to each other. Figure 4 shows how two modular fluorescent light fixtures can be installed so the tubes are perpendicular to each other.

DETAILED DESCRIPTION OF THE INVENTION

fluorescent tube. The paragraph below describes the preferred embodiment of this new and unique modular fluorescent energy-saving light fixture and its new uses.

Description Of the Preferred Embodiment

A cross-sectional diagram of the preferred embodiment of the modular light fixture is shown in figure 1. Figure 2 shows the bottom view of the modular fluorescent fixture, which is generally square in shape. A modular fluorescent light fixture consists of a housing, which is a 5-sided box in configuration, a reflector, and electrical components. The 5-sided housing consists of housing ends, housing sides, and a housing top. Attached to the inside of the housing ends of the housing are socket supports. The socket supports are spaced to accommodate the length of the F14T5 fluorescent light tube. The reflector can be any shape defined by a conic section such as an ellipse, parabola, or hyperbola. The preferred shape for the reflector, however, is the dual compound reflector described in US patent 6,170,962, which is hyperbolic in cross-section. The reflector is held in place by attaching the reflector to the socket supports and housing sides. Two T5 socket sets, used to hold the two T5 fluorescent tubes in place and to supply electrical power to the fluorescent tubes, are mounted to the socket supports. The housing also contains a ballast of the common type according to the known art to supply electrical power to the fluorescent tubes by an electrical circuit connecting the ballast to the socket sets.

Fluorescent light fixtures found in offices and similar places are generally twice as long as they are wide. Two modular fluorescent light fixtures can be installed together to make a typical fixture called a troffler. The modular fluorescent light fixtures can be configured in two ways: first, with the tubes in both modules being parallel to each other, as shown in figure 3, or, second, with the tubes of the modules perpendicular to each other, as shown in figure 4. This second fixture configuration is useful in the corners of a room and represents a new use.

Yet another new use of the modular fluorescent light fixture is for retrofitting existing, older style light fixtures. The reason for performing a retrofit is for the purpose of saving energy. These older light fixtures must have all the tubes, sockets, and ballasts removed

but retain the existing housing. The modular fluorescent light fixture is inserted and attached to the existing housing.

Specific description of the invention

Modular light fixture 100, comprising a housing 101, is made up of housing ends, 102, housing sides, 103, and a housing top, 104. At each end of the housing, 101, attached on the inside of the housing ends, 102, are located socket supports, 105. The inside spacing of the socket supports, 105, is such as to accommodate the length of the F14T5 fluorescent tube. A dual compound reflector, 106, is attached to the socket supports, 105, and the housing sides, 103. Two T5 sockets sets, 107R and 107L, are mounted on the socket supports, 105. The right T5 fluorescent tube, 108R, plugs into the right socket set, 107R, and the left T5 fluorescent tube, 108L, plugs into the left T5 socket set, 107L. The left and right socket sets, 107R and 107L, are electrically connected in a conventional way according to the known art to a ballast, 110. The ballast is mechanically attached to the housing, 101.

Two modular light fixtures, 100, can be installed adjacent to each other in two ways. The first way is for the two fixtures, 100, installed with the fluorescent tubes, 108R and 108L, being parallel, as shown in figure 3. The second method is for the two modular light fixtures, 100, installed with the fluorescent tubes 108R and 108L, being perpendicular to each other, as shown in figure 4. Either configuration can be used to retrofit old, existing fluorescent light fixtures.

The foregoing description of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Obvious modifications or variations are possible in light of the above teachings. The embodiment was chosen and described in order to best illustrate the principles of the invention and its principle application to thereby enable one of ordinary skill in the art to best utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the claims, which are appended.